AMENDMENTS TO THE SPECIFICATION

On page 1, line 2, please amend the title as follows:

OPTICAL MODULE WITH LENS HOLDING MEMBER.

On page 8, please amend the paragraph beginning at line 13 as follows:

An optical module ~~10a~~ 10 according to an embodiment of the present invention is now described with reference to Fig. 1. The optical module ~~10a~~ 10 comprises a mounting member 20, such as a stem, an optical semiconductor element 22, a lens holding member 30 such as a cap, a sleeve guide 36, and a wave guide member 39. The optical module 10a may further comprises light condensing means, such as a lens 32, provided between the optical semiconductor element 22 and the wave guide 39. Moreover, the optical module 10a may be provided with a sleeve 34 and a ferrule 38, and the ferrule 38 is inserted into the sleeve 34. The sleeve 34 and ferrule 38 can be accommodated in the sleeve guide 36, and the wave guide member 39 includes an optical fiber held by the ferrule 38.

On page 9, please amend the paragraph beginning at line 2 as follows:

In the optical module ~~10a~~ 10, the following are provided along an axis 12 extending in a predetermined direction. A mounting member 20, an optical semiconductor element 22, a lens holding member 30, a lens 32, a sleeve 34, a sleeve holder 36, a ferrule 38, and a wave guide member 39. The optical axis of the optical semiconductor element 22 can be adjusted to the predetermined axis 12. The subsequent description relates to an optical module including an optical fiber used as a wave guide member 39. The optical fiber, working as an optical wave guide, has a core portion and a cladding portion provided around the core portion. The side of

the optical fiber is coated with resin, and the optical fiber is inserted into the ferrule as shown in Fig. 1.

On page 11, please amend the paragraph beginning at line 15 as follows:

The tubular portion 30a has a side wall portion extending in the predetermined axial direction 12, and this side wall portion comprises a first inner face 30g and a second inner face 30f. The first inner face 30g extends from the first end portion 30b. A ring-shaped extending portion (extension) 30h ~~in~~ is provided on the second inner face 30f to form a lens installation hole. A lens 32 can be disposed in the ring-shaped extending portion (extension) 30h. The lens installation hole is defined by a holding face 30i provided so as to surround the axis 12. The lens 32 can be positioned by means of this lens installation hole. The lens 32 in the lens installation hole is secured to the lens holding member 30 in a bonding member 42, such as low melting point glass. The secured lens 32 is faced to the optical semiconductor element 22. The bonding member 42 is provided in a ring shape so as to bond the lens 32 and the holding face 30i with each other, thereby ensuring the sealing of the bond portion. The second end portion 30c comprises an end face 30j for supporting the sleeve holder 36.

On page 16, please amend the paragraph beginning at line 1 as follows:

The first end face 38b can be polished to form a first angle, for example, approximately a right angle, with respect to a plane perpendicular to the axis 12. This polishing provides the close optical coupling between the end portion of the optical fiber and the optical fiber 46. The second end face 38a is inclined to a first angle of α degrees beyond an angle of 0 degree, for example, approximately 6 degrees, with respect to a plane perpendicular to the axis 12. The end

face ~~38b~~ 38a can reduce the reflection of light at the end of the ferrule 44. The inclined end face 38a of this kind ~~prevents light reflected at the end face 38a from returning to the optical module 10, and~~ prevents light reflected by the optical module from returning to the end face 38a.

On page 18, please amend the paragraph beginning at line 2 as follows:

The component mounting face 20a is divided into a mounting region 31a and a supporting region 31b by a boundary line 31. The mounting region 31a mounts electronic components, such as the optical semiconductor element 22 and the electronic semiconductor element 23, and, in the embodiment shown in Fig. 2, this region is indicated by a diameter L_2 of 3.29 mm. The terminal electrodes are arranged on the circumference of a circle of a diameter L_3 = 2.54 mm. The sealing glass members 28a are located inside the region of diameter L_2. The mounting member 20 has an outer circumference indicated by diameter L_1 = 4.5 mm, and positioning projection 20c on this outer circumference. The support region 31b is provided ~~in~~ so as to surround the mounting region 31a. The mounting member ~~30~~ 20 is secured to the supporting region 31b.

On page 18, please amend the paragraph beginning at line 18 as follows

Fig. 2 illustrates a closed curved line 33, provided so as to surround the mounting region 31a, in the support region 31b. Fig. 3 depicts a hypothetical reference surface 33a extending in the direction of the predetermined axis. This closed curved line 33 is positioned on the reference surface 33a. The lens holding member 30 is provided on the mounting member 20 such that the first inner face 30g is positioned outside the reference surface 33a and the second inner face ~~20f~~ 30f is positioned inside the reference surface 33a. According to this positioning, an optical

module 10 is provided with a structure allowing the securing of the lens holding member 30 and the mounting member 20 to each other without weakening the hermetic sealing provided by the glass sealing members 28a.

On page 20, please amend the paragraph beginning at line 10 as follows:

Referring to Fig. 4, the upper electrode 60 comprises an accommodating hole 60a for accommodating the lens holding member 30. This accommodating hole 60a has a first portion 60b and a second portion 60c. The first portion 60b has a first inner face 60d, which is faced to a first outer face 30k of the lens holding member 30. This facing allows the first inner face 60b to reduce the deformation of the lens holding member 30. The second portion 60c has a second inner face 60f, which is faced to a second outer face ~~30m~~ 301 of the lens holding member 30. The second inner face 60f holds the lens holding member 30. The upper electrode 60 has a third inner face 60e connecting the first inner face 60b and the second inner face 60f with each other, and this third inner face 60e is faced to a third outer face ~~301~~ 30m of the lens holding member 30. The first inner face 60d and the second inner face 60f extend in a direction of the predetermined axis 12, and the third inner face 60f extends in a plane which intersects with the predetermined axis 12. The third inner face 60e is available to apply force to the lens holding member 30 through the third outer face 30m.

On page 22, please amend the paragraph beginning at line 13 as follows:

Referring to Fig. [4] 6, a process of assembling the optical module 10 is now described. The stem guide 50 is positioned on the lower electrode 40. The mounting member 20 is positioned in the accommodating hole 50a of the stem guide 50. The terminal installation face

20b of the mounting member 20 is made to face the lower electrode 40. Electronic components, such as the 20 optical semiconductor element 22 and an electronic semiconductor element 23, have already been assembled on the component mounting face 20a of the mounting member 20.

On page 24, please amend the paragraph beginning at line 13 as follows:

Fig. 7B shows an optical module being worked on in manufacture, wherein the sleeve holder 36 and sleeve 34 have been installed in the lens holding member 30. Then, the optical module ~~10a~~ 10 is completed. The optical module 10 exhibits excellent sealing characteristics at the glass sealing portions between the terminal electrodes 28 and the mounting member 20, and prevents the occurrence of defective products having insufficient sealing characteristics at the glass sealing portions.

On page 24, please amend the paragraph beginning at line 23 as follows:

Referring to Figs. 8A, 8B, 9, 10A and 10B, the reasons for an excellent hermetic sealing in the optical module ~~10a~~ 10 are now explained. Fig. 9 shows a seam sealer apparatus in which a comparative upper electrode is installed. Figs. 10A and 10B illustrate this comparative upper electrode. As shown in Figs. 9, 10A and 10B, a first electrode 76 comprises an accommodating hole 76a for accommodating a lens holding member 74. The accommodating hole 76a holds the lens holding member 76. A stem guide 52 is provided on the second electrode 42. A mounting component 72 is provided in an accommodating hole 52a of the stem guide 52.

On page 25, please amend the paragraph beginning at line 10 as follows:

Fig. 8A illustrates a manufacturing step of an optical module ~~10a~~ 10 without using an upper electrode 60. The optical module 10 comprises a mounting member 20 and a lens holding member 30. The lens holding member 30 is provided on a seam sealing electrode 76. The mounting member 20 is provided on the lens holding member 30, while being guided by a stem guide 51 positioned in alignment with the electrode 76. An electrode 40 is provided on the stem guide 51 and the mounting member 20. Pressure 78 and welding current are applied between the electrode 40 and electrode 76. Pressure 80 coming from the pressure 78 acts on the side wall portion of the lens holding member 30, and hence deforms the side wall portion of the lens holding member ~~74~~ 30. This deformation may damage the sealing characteristics of the glass sealing portion.

On page 25, please amend the paragraph beginning at line 26 as follows:

Fig. 8B shows a manufacturing step of an optical module ~~10a~~ 10 by use of an upper electrode 60. Even if the inner wall of the upper electrode 60 applied pressure 78 to the lens holding member 30, the inner wall 60d of the upper electrode 60 suppresses the deformation of the side wall 30k of the lens holding member ~~74~~ 30. In other words, even if force 80 coming from the force 78 is applied so as to deform the side wall 30k, the inner face 60d of the upper electrode 60 applies the force 82 against the force 80 to reduce the deformation. This reduction prevents the occurrence of the insufficient sealing of the glass sealing portions.

On page 26, please amend the paragraph beginning at line 13 as follows:

Fig. 11 shows another embodiment of an upper electrode. This upper electrode component 86 comprises an upper electrode 60 and an insulating component 68. The insulating

component 68 is made from ceramic, for example, and is installed on the third inner face 60e. The insulating component 68 may be a loop-shaped member provided on the third inner face 60e, but is not limited thereto. If the insulating member ~~60e~~ 68 is provided between the third inner face 60e and the lens holding member, the current flows mainly on a path indicated by arrow 84 shown in Fig. 11. Since the upper electrode 60 has a lower electrical resistance than the lens holding member 30, the current concentrates on the welding portion of the lens holding member ~~3~~ 30. Therefore, heat generation is suppressed at the side face of the lens holding member, thereby preventing this side face from deforming. Consequently, the sealing characteristics of the glass sealing portions becomes further improved. A third outer face ~~301~~ 30m receives a force via the third inner face 60e and the insulating member 68.

On page 27, please amend the paragraph beginning at line 8 as follows:

As described in detail in the foregoing embodiments, in the optical module ~~10a~~ 10, the lens holding member 30 is accommodated within a cylindrical region, centered on the axis 12, of diameter of 4.5 mm ($L \leqq 4.5$ mm). Moreover, in the optical module ~~10a~~ 10, the sleeve 34 is accommodated within a cylindrical region, centered on the axis 12, of diameter of 4 mm ($L \leqq 4$ mm). Therefore, an optical module having a structure capable of reducing its physical size and lowering the leakage of the glass sealing portions is provided. A seam sealer electrode component used for manufacturing the optical module is also provided.

On page 29, please amend the paragraph beginning at line 10 as follows:

In the optical module 10b, it is possible to provide a lens holding member 90 on the supporting portion 20e, and to provide a sleeve holder (reference numeral 36 in Fig. 1) on the

mounting face 90j of the lens holding member 90. According to this structure, a sleeve outside the lens holding member 90 is not needed, thereby reducing the size of the optical module 10b. The lens holding member 90 is positioned inside ~~another~~ a reference surface 93a, extending in a direction of the predetermined axis 12, provided so as to contact the outer edge of the mounting member 20. According to this structure, if the optical module is a light-emitting module, then it is possible to provide an optical module with a structure capable of reducing its physical size and achieving optical coupling between a semiconductor light-emitting element and an optical fiber without additional sleeve provided outside the lens holding member 90.

On page 30, please amend the paragraph beginning at line 15 as follows:

Referring to Fig. 13, the mounting member 20 comprises a plurality of holes 96. Terminal electrodes 28 pass through these holes 96, respectively. Each hole 96 has a side face 96a, and a glass member 28a is provided between the side face 96a of each hole 96 and the side face of each terminal 28. A sleeve 35 is mounted directly on the mounting face 90j, and a lens holding member 90 is secured by means of connecting portions 37, such as weld portions. The sleeve 35 may have the same structure as the sleeve 34, but it is not limited thereto. Figs. 12 and 13 depict a cylindrical reference surface 93b (hereinafter, also referred to as the reference surface 93b). The ~~cylindrical~~ reference surface 93b extends in a direction of the predetermined axis 12 and is defined such that it ~~is~~ circumscribes the side faces 96a of all holes 96. The lens holding member 90 comprises a first inner surface 90g and a second inner surface 90f. By providing the lens holding member 90 with two inner surfaces 90f and 90g, the first inner surface 90g is positioned outside the reference surface 93b, and the second inner surface 90f is positioned inside the reference surface 93b. This structure of the lens holding member 90 allows the

reduction of force acting to the glass member 28a in affixing the lens holding member 90 to the mounting member 20, thereby providing a structure which allows the hermetic sealing in the region of the sealing glass member.

On page 32, please amend the paragraph beginning at line 6 as follows:

The side wall portion of the lens holding member 90 comprises a third inner surface 90k which connects the first inner surface 90g and the second inner surface 90f with each other. The supporting face 20e and the third outer face 90p extend along ~~a common reference plane~~ respective reference planes. The lens holding member 90 receives pressure from a welding electrode (reference numeral 60 in Fig. 4) via the third outer surface 90p.

On page 32, please amend the paragraph beginning at line 14 as follows:

The third inner surface 90k extends in another reference plane which intersects with the reference ~~plane~~ planes. Due to this inclination, it is possible to provide a structure capable of increasing the thickness between the third inner surface 90k and the third outer surface 90p, in comparison to the thickness of other regions of the lens holding member 90. This structure increases the mechanical strength of the third outer surface 90p, and the third outer surface 90p is bumped against the face (reference numeral 60e in Fig. 4) of a welding electrode (reference numeral 60 in Fig. 4).

On page 33, please amend the paragraph beginning at line 10 as follows:

In the optical module ~~20b~~ 10b, the side wall is divided into first and second portions arranged along the predetermined axis 12. The first inner surface 90g is provided in the first

portion. The second inner surface 90f is provided in the second portion. The second length D_4 is longer than the first length D_3 in the lens holding member 90 and the first inner face 90g is positioned outside the reference surface 93b, so that is possible to increase a distance between the terminals 28 and the lens holding member 90 and to ensure a region for accommodating the optical semiconductor element.

On page 34, please amend the paragraph beginning at line 15 as follows:

In the optical module 10b, it is possible to position the second outer face ~~90n~~ 90m inside the first outer surface ~~90m~~ 90n by locating a second inner surface 90f inside the cylindrical reference surface 93b, thereby increasing the surface area of the third outer surface 90p.

On page 35, please amend the paragraph beginning at line 13 as follows:

Referring to Fig. 14, in the optical module 10b, a semiconductor element 23 is mounted in the mounting member 20. The semiconductor element 23 processes signals from an optical semiconductor element 22, such as a semiconductor light-receiving element. The terminals 28 of the mounting member are connected to the optical semiconductor element 22 and the semiconductor element 23 through connecting members, such as bonding wires 29. In the optical module 10b, since the first inner surface 90g is provided outside the cylindrical reference surface 93b, it is possible to provide a small-sized optical module 10b and to incorporate a plurality of electronic elements, such as the semiconductor element 23 and the semiconductor light-receiving element ~~12~~ 22 in the optical module 10b.

On page 37, please amend the paragraph beginning at line 17 as follows:

In addition, according to experimentation by the present inventor, it is preferable that the length of the inner terminal portions 28b is in a ~~rage~~ range from 0.2 mm to 0.4 mm. The mounting member 20 holds the terminals 28 via the glass sealing members 28a. If the length D_8 of the inner terminal portions 28b is 0.2 mm or less, then the sealing glass material of the mounting member may cover the portions of the terminals for connecting the bonding wires thereto. If the length of the terminals 28 is less than 0.4 mm, then it is possible to reduce the size of the lens holding member 90 and to achieve good welding portions between the lens holding member 90 and the mounting member 20. The value $D_5 - D_8$ of 9.3 mm provides good manufacturing tolerances with respect to positional misalignment of the lens holding member, and provides satisfactory intervals between the bonding wires and the inner surfaces.

On page 38, please amend the paragraph beginning at line 24 as follows:

Fig. 16A shows a lens holding member 92 and mounting member 20 before welding. Fig. 16B shows a lens holding member 91 and mounting member 20 after welding. The optical module ~~20e~~ 10c comprises the lens holding member 91 instead of the lens holding member 90 of the optical module 20b. A welding face 91d is provided on one end of the lens holding member 91. A loop-shaped welding projection 91e is provided on the welding face 91d. Similarly to the lens holding member 90, the lens holding member 91 comprises a first to third inner surface 91f, 91k, 91g and a first to third outer surface 91m, 91p, 91n.

On page 39, please amend the paragraph beginning at line 10 as follows:

The optical module ~~20e~~ 10c further comprises a welding portion 95a which bonds the one end of the lens holding member 91 with the supporting face 20e. The central line (single dotted

line) F_1 between the first outer surface 91m and the first inner surface 91g is located inside the central line (single-dotted line) F_2 between the inner edge and outer edge of the welding portion 95a. According to this structure, it is possible to separate the terminals 28 of the mounting member 20 from the welding portion ~~95~~ 95a. It is also possible to reduce the occurrence of defects caused by a molten metal produced in welding the end portion of the lens holding member 91 and the supporting face 20e.

On page 39, please amend the paragraph beginning at line 24 as follows:

Fig. 17A illustrates a lens holding member 97 and a mounting member 20 before welding. Fig. 17B illustrates a lens holding member 97 and a mounting member 20 after welding. The optical module 20d comprises a lens holding member 97 instead of the lens holding member 90 of the optical module ~~20b~~ 10d. A welding face 97d is provided on one end of the lens holding member 97. A loop-shaped welding projection 97e is provided on the welding face 97d. The lens holding member 97, similarly to the lens holding member 90, has a first to third inner surface 97f, 97k, 97g and a first to third outer surface 97m, 97p, 97n.

On page 40, please amend the paragraph beginning at line 10 as follows:

The optical module ~~20d~~ 10d is provided with a welding portion 95b for bonding the one end of the lens holding member 97 with the supporting face 20e. In the lens holding member 97, the first inner surface 97g has an inclined face 97q at the end portion. A welding portion 95b is located between the edge of the inclined face 97q and the edge of the first outer face 97m. According to this structure, the welding portion 95b can be separated from the terminals 28 of the mounting member 20 due to an inclined face 97q. When welding and applying pressure,

molten metals enter a gap between the inclined face 97q and the supporting face 20e and solidify thereat. Therefore, it is possible to reduce the occurrence of defects due to the accumulations of molten metal as mentioned above.